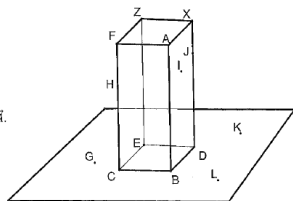


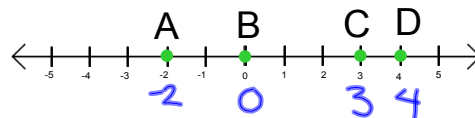
## Warm-up!

True or False.

1.  $\overline{FH}$  and  $\overline{JL}$  intersect in point D.
2.  $\overline{FH}$  and  $\overline{CB}$  intersect in point H.
3. Another name for plane BCL is plane DLK.
4. Another name for plane ZFA is plane XFA.
5. Another name for plane EDL is plane EDX.
6. Another name for  $\overline{JD}$  is  $\overline{XD}$ .
7. The intersection of plane HBC and plane ABD is  $\overline{BA}$ .
8. The intersection of plane ECL and plane AXD is  $\overline{AX}$ .
9. Any 3 points are coplanar.
10. Any 2 points are collinear.
11. Name a point coplanar with A, I, and J.
12. Name a point collinear with D and J.



## 1-3 Distance and Midpoints



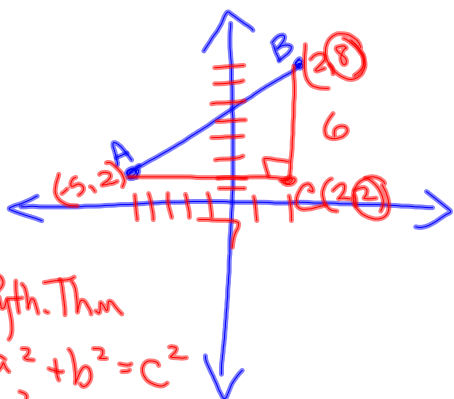
$$AB = |0 - (-2)| = 2$$

$$AD = |-2 - 4| = 6$$

-subtract  
the coordinates  
to find the  
distance

Sep 16-7:03 AM

Sep 17-11:19 AM



Pyth. Thm

$$a^2 + b^2 = c^2$$

$$6^2 + 7^2 = c^2$$

## The Distance Formula

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$\begin{array}{r} 65 \\ \sqrt{513} \end{array}$$

EX: A(-2, -3) B(2, 4)

$$d = \sqrt{(-2-2)^2 + (-3-4)^2}$$

$$\sqrt{16 + 49}$$

$$AB = \sqrt{65}$$

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Sep 17-11:22 AM

EX: C( $\overset{x_2}{6}, \overset{y_2}{3}$ ) D( $\overset{x_1}{0}, \overset{y_1}{0}$ )

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$= \sqrt{(6 - 0)^2 + (3 - 0)^2}$$

$$= \sqrt{36 + 9}$$

$$= \sqrt{45}$$

45  
9 5

$$CD = 3\sqrt{5}$$

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Find MN and OP

Do

1. M(-5, -2) N(1, 4)

2. O(-1, -1) P(20, 6)

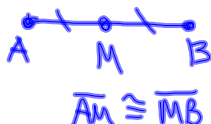
$$MN = 6\sqrt{2}$$

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### Midpoint of a Segment

Midpoint—point halfway between endpoints of a segment

--Average of the coordinates



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### The Midpoint Formula

$$M\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

or R(-4, -2)  
S(5, 3)

$$M\left(\frac{-4+5}{2}, \frac{-2+3}{2}\right)$$

$$M\left(\frac{1}{2}, \frac{1}{2}\right)$$

Sep 18-8:23 AM

Find the midpoint

Do

1.  $(4, -6)$   $(-3, 2)$

2.  $(-4, -3)$   $(8, 5)$

$(\frac{1}{2}, -2)$

$(2, 1)$

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M is the midpoint of  $\overline{UD}$ 

Suppose:

U(5, 2)

M(3, -1)

D( , )

$$\frac{5+x}{2} = 3$$

$$5+x = 6$$

$$x = 1$$

$$\frac{2+y}{2} = -1$$

$$2+y = -2$$

$$y = -4$$

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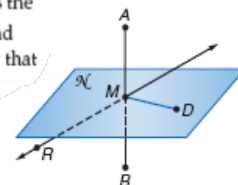
Do

1. U(-5, -3) M(-6, 4) Find D

2. M(-3, 3) D(-14, 12) Find U

Segment Bisector—segment, line, plane that intersects a segment at its midpoint

In the figure at the right, M is the midpoint of  $\overline{AB}$ . Plane  $\mathcal{N}$ ,  $\overline{MD}$ ,  $\overline{RM}$ , and point M are all bisectors of  $\overline{AB}$ . We say that they *bisect*  $\overline{AB}$ .



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HW  
p25-26  
13-39odd, 43, 45  
(not 19,21)

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